# HIMACHAL PRADESH INNOVATES

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CONTENTS

# HIMACHAL PRADESH
## INNOVATES

# PREFACE

National Innovation Foundation (NIF) has been pursuing the mission of making India innovative and a creative society since 2000 with the active support of Department of Science and Technology, Government of India. Till date NIF has been able to scout innovations and traditional knowledge practices from over 520 districts across India.

Thanks to the support of volunteers from Honey Bee Network, we have been able to discover many unsung heroes and heroines of our society who have solved local problems without any outside help.

Despite various constraints, NIF has put together a small book celebrating creativity, innovation and traditional knowledge from Himachal Pradesh. I am conscious of its limitation in terms of coverage and outreach. But if we could uncover at least a few examples of the ability of local communities and individuals to solve problems on their own without outside help, how much more can be done if state and private sector agencies join hands with NIF actively.

I invite the state government and its various organs to actively support our quest to uncover many more creative communities and individuals in rural and urban areas. NIF will then help in building value chain around them.

The book is divided in three parts. The mechanical innovations developed by innovators from Himachal Pradesh are covered in part one. Selected examples of herbal traditional knowledge are given in part two. The innovations from other parts of the country suitable for the development of Himachal Pradesh are given in part three.

By no stretch of imagination, could we claim that we have achieved a great deal. We have merely made a simple point. There are a large number of knowledge rich people who

may not have been educated much, may in fact be economically poor also, but still have the ability to solve a few problems so well.

The challenge really is to work out a synergy so that no creative voice remains unheard, and no solution remains localized and unrecognized. By adapting public policy in support of grassroots innovators and traditional knowledge holders, we can make economic development process more inclusive and sustainable.

This book on innovations has been compiled at the request of Dr. Vijay Kelkar, Chairman, Finance Commission and the Member, Governing Council of the National Innovation Foundation as a tribute to the creativity and innovation at grassroots. This presentation is part of a series of innovation compendium prepared for every State of India. We hope this will be followed up in the form of concrete policy and institutional initiatives in each State to empower creative people to improve the quality of life of common people and thus promote inclusive growth.

It is my belief that such examples will act as spur for other State government departments to look for creative efforts of their staff and users at ground level. I hope that NIF will have the opportunity to work closely with the State government in future and expand knowledge base, add value to selected technologies and help them diffuse through commercial and non-commercial social channels for improving the livelihood of the majority of the people.

R. A. Mashelkar, FRS
Chairperson, Governing Council
National Innovation Foundation, Ahmedabad
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# Building a Bridge with Grassroots Innovators in Informal Sector

To make the Indian development process more inclusive, there is no escape from building upon creative and innovative experiments pursued by common people at village or semi-urban level. Many of these experiments lead to development of innovations, which can improve productivity and generate employment. However, the purpose of a particular innovator may often be to solve just his/her problem. There is no mechanism available for him to share the knowledge, innovation or practice with other people in different regions. Sometimes, ideas and innovations get diffused through word of mouth. But many times, these ideas remain localized. In the process, potential growth and social development gets constrained. To overcome this constraint, Honey Bee Network with a handful of volunteers triggered a movement, twenty years ago to scout, spawn and sustain the unaided innovations and outstanding traditional knowledge from the informal sector of our country.

Drawing upon this experience, National Innovation Foundation (NIF) was set up in 2000 with the help of Department of Science and Technology, Government of India to scale up the idea of learning from grassroots innovators.

Under the inspiring leadership of Dr. R. A. Mashelkar, Chairperson NIF and former Director General, Council of Scientific and Industrial Research (CSIR), NIF has taken major initiatives to serve the knowledge-rich, economically poor people of the country. It is committed to make India innovative by documenting, adding value, protecting the intellectual property rights of the contemporary unaided technological innovators, as well as of outstanding traditional knowledge holders. It aims at promoting lateral learning among local communities to generate low cost affordable solutions of the persistent and emerging problems, and enhance the diffusion of innovations on a commercial as well as non-commercial basis.

**How does NIF work?**

Primarily, NIF has five functions: (a) Scouting and documentation, (b) Value addition and research and

[1] The Honeybee collects pollen from the flowers but they are not impoverished, in the process links one flower to another enabling cross-pollination. Similarly, the Honey Bee Network strengthens people-to-people contacts, learning and networking by pooling the solutions developed by individuals across the world in different sectors. The network acknowledges the innovators, traditional knowledge producers and communicators so that they do not remain anonymous.

development, (c) Business development and Micro Venture, (d) Intellectual Property Rights protection and (e) Dissemination, database development and IT applications.

NIF has been entrusted with the responsibility of building a National Register of Grassroots Innovations and Traditional Knowledge. It is not enough to document or disseminate the innovations or outstanding traditional knowledge. Value addition is very important for harnessing the full potential of the idea. NIF has entered into MOU with CSIR and Indian Council of Medical Research (ICMR) besides other organizations. CSIR has allocated funds to support research on grassroots innovations in CSIR labs. Similarly, ICMR supports research on such herbal healing knowledge, which has not been documented in the classical texts and formal institutional literature. NIF also helps in generating a very large pool of open source / public domain technologies. A small number of innovations are also protected by patents and other IPRs.

For most innovators, attracting risk capital for converting innovations into enterprise is very difficult. They neither can offer much collateral nor are they able to develop a business plan or deal with formal R&D system.

A Micro Venture Innovation Fund (MVIF) has been set up with the help of SIDBI to provide risk capital for technologies at different stages of incubation. Under single signature, innovators are trusted and investments are made to help them commercialise their innovations. Most innovators do not make good entrepreneurs. For entrepreneurship, one has to make consistent batch by batch production of products. Innovators are often incorrigible improvisers. They seldom make two things alike. NIF has helped such innovators to license their technologies to third party entrepreneurs. Most of the licenses have been given to small entrepreneurs and in a few cases, to medium enterprises.

A very elaborate benefit sharing system has been developed, governed by the Prior Informed Consent (PIC) of the knowledge

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The Honey Bee Network strongly believes in sharing knowledge among the providers of innovations in their own language, which is achieved by publishing local language versions of Honey Bee newsletter. It also ensures that a fair share of benefits arising from commercial exploitation of local knowledge and innovations reaches the innovators and knowledge providers.

providers. Attempt is made to share benefits not only with the innovators but also with their communities and for nature conservation. In addition, a small part is kept for contingency support to needy innovators, for R&D stakeholders, promoting women's innovations and meeting overhead costs.

It is remarkable that grassroots innovations are generating global demand, as evident from inquiries from around fifty-five countries for various technologies, NIF has succeeded in commercializing products across countries in six continents apart from being successful in materialising thirty cases of technology licensing with the help of partner agencies.

**What has it done?**

With major contribution from the Honey Bee Network, NIF has been able to build up a database of more than 1,00,000 ideas, innovations and traditional knowledge practices (not all unique, not all distinctive) from over 520 districts of the country.

NIF has filed 198 patents in India and seven in US and one PCT application. Out of these, 33 patents have been granted to grassroots innovations in India and four in US. NIF has funded 113 projects under MVIF to the extent of Rs.1.3 crores. Hundreds of technologies have diffused through farmer to farmer social network.

NIF has proved that Indian innovators can match anyone in the world when it comes to solving problems creatively. Where they perform better than rest is in generating more affordable sustainable solutions by using local resources frugally.

Those who see poor only as the consumer of cheap goods, miss the knowledge richness at the grassroots level. The Poor can be the Providers also.

The Grassroots to Global (G2G) model that NIF is propagating is all set to change the way the world looks at the creativity and innovations at grassroots.

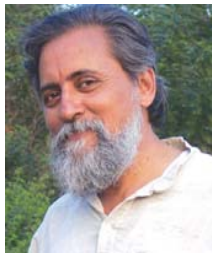
**How can state government join hands with NIF?**

a. NIF has no field extension unit nor does it want to have one. However, state government has several field functionaries in the area of agriculture, education, industry, rural development, women and child care, forestry, etc. There can be a very fruitful partnership between NIF as a

source of innovative ideas and technologies and state government as partner in dissemination, value addition and even commercialization through incentives, promotion, subsidies, etc.

b. State government can join the national campaign for scouting innovations and traditional knowledge and motivate its grassroots functionaries to join hands with NIF in uncovering the talent at the community level.
c. Students in schools and colleges can be motivated to scout creative and innovative people in their neighbourhoods and send the entries to NIF (Post Box No.15051, Ambavadi, Ahmedabad 380 015, campaign@nifindia.org). Examples of innovations can also be included in the curriculum for the school and college education.
d. Demonstrations and trials can be organized at various regional research stations and KVKs (Krishi Vigyan Kendras) so as to create awareness about the creative potential of common people.
e. The research institutions can be mandated to add value to the knowledge of innovative people and help in protecting their knowledge rights.
f. On the state's website, link to NIF can be given and the innovations from the region can be displayed to put forward the creative face of the state before the people.
g. Some of the innovative people identified by NIF and/or state government could be awarded at district and state level besides giving them support for further work.
h. A nodal officer could be appointed to keep in dynamic touch with NIF to ensure that all the areas of possible cooperation are explored.

I hope that NIF would be able to develop a functional, fruitful and fulfilling relationship with the State of Himachal Pradesh. Tremendously rich knowledge of biodiversity and environment besides numerous grassroots innovations can be leveraged through the proposed collaboration.



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Professor, Indian Institute of Management, Ahmedabad
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PART I

# INNOVATIONS
## from HIMACHAL PRADESH

This section contains path breaking innovations originating from ignited mind of Himachal Pradesh

**Kamal Narayan Pradhan 'Gorkha'**

Kangra

# Modifications in gears

Anybody who has driven on mountainous roads knows that while descending on the slopes, one needs a kind of locking mechanism in the gear to prevent slippages. Mr.Kamal Narayan has modified the old gears which may get worn out and may cause accidents if not replaced or repaired.

He has modified the gear arrangement to prevent slippage even in the new vehicles. This innovation has been found very useful by the heavy vehicle drivers. Its dissemination, however, is localised.

**Gurjeet Singh**
Dharamshala

# Portable painting system

Often, users need a small portable spray painting system to meet local needs including indoors. Mr. Singh has developed such a system using available parts such as compressor, air tank and a spray gun.

Weighing hardly ten kilograms and costing one third of the commercial systems, it works very well. By using a tube in place of air tank, the innovator projects that the cost can be reduced for certain type of jobs.

03

# Dynamic shoes generating energy

**Sunil Kumar**

**Pankaj Sharma**

**Pooja Sharma**

Kullu

Eight years ago, three students from Kullu thought of a question that may have occurred to many. They conceived an idea of shoes, which can charge batteries while walking. The more you walk, the more energy you harness.

The idea was to use a small dynamo fitted in the sole of the shoe such that with pressure, it will move and charge the batteries. The energy generated will be used for running different gadgets.The prototype was much appreciated by the former President, Dr. A.P.J.Kalam during the second award function in 2002.


BOSS
Water
Missile

04

# BOSS water missile

**Bisan Das**

**Omkar Singh**

**Sudhir Sood**

Kangra

Three friends together in Kangda have designed a two wheeler scooter based fire brigade. Using the first letter of their names, they call it “BOSS Water Missile”. It can be used to extinguish fire in small lanes where normal fire brigade vehicles cannot reach. In addition to the water carried with the scooter, one can also attach a pump to spray the water with higher intensity.

The same scooter based sprayer can also be used for spraying pesticides or for sprinkling water in the gardens and has potential for national level diffusion. In similar lines, Sheikh Jangid from Maharashtra has developed a paint sprayer attached to the scooter. Such affordable devices can provide low cost means for generating self-employment.

05

**Tej Singh Goyal**
Mandi

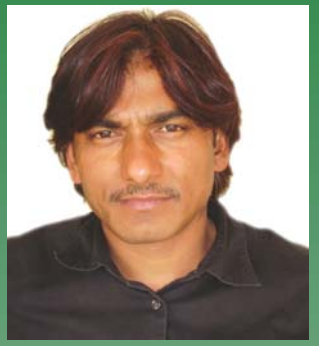
# Thermo water lifting pump

In hill areas, one finds enormous amount of pine needles which can be used more effectively. Mr. Goyal has developed a biomass based thermal water lifting pump using pine needle reserves.

Efforts will be made to diffuse the technology through targeted incentives for renewable energy.

06

# Multi-way switch



**Satish Kumar**
Hamirpur

Satish Kumar is a young electrician with a very creative mind. Many times, in large buildings or bigger houses, one can have only two way switches, but he has developed a multi way switch which enables switching on or off lights or a device from multiple points. Several people can switch on the light or a device without having to go to the master switch. He has also developed a control panel which displays the on and off status of different appliances connected to the system. If a house has multiple doors having switches for the common doorbell, under normal circumstances, one would not know which door should be opened. With his device one can find out from which door did the bell ring. It is a simple low cost improvement which can improve convenience.

**Varun Kumar Saini***
Una

# Blitz- The car from the junkyard

The innovator, Mr. Varun has designed a small car assembled by pooling together used parts and components sourced from different four wheelers. It has a unique gear shifting mechanism and can make the ride very comfortable.

Such innovations reflect the the spirit of problem solving and retrofitting and encourages more people to solve problems through their own imagination and limited resources.

*Engineering student. As per its mandate, NIF does not consider such professionals for awards or financial support, but only helps in providing visibility or linkages.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PROJECT BY: VARUN KR. SAINI
B.Tech. MECHANICAL 3rd YR
C.T. INSTITUTE, SHAHPUR

08

# Redefining passion with fruits

**Sitaram Thakur**
Una

Growing apples in plains is not generally seen but Sitaram Thakur has made it possible. Supported by his brother, using grafting and other techniques, he has not only grown apples in the plains, but has made many more horticultural innovations.

He has developed techniques to grow and cultivate mango and sweet lime round the year. He has modified several farm implements. His experimental spirit is worth emulating.

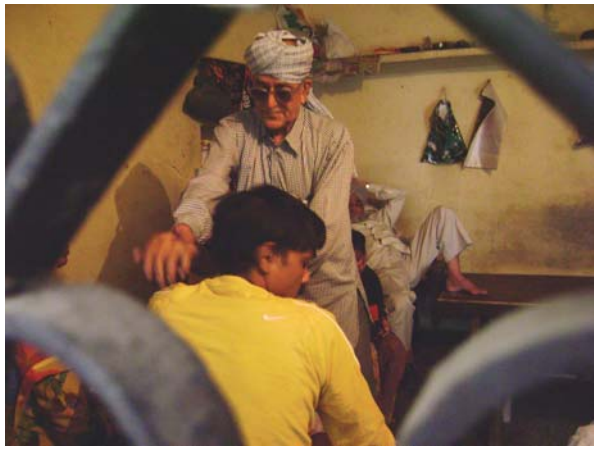
09

# Traditional herbal healer and bone setter

**Rumi Ram Thakur**
Hamirpur

Traditional knowledge and specialised skills is getting eroded very fast. There are very few traditional bone setters and healers whose knowledge and skills have been acquired by the young people.

Mr. Thakur serves society with an extraordinary spirit of service. Efforts include detailed and systematic documentation of such skills , developing next generation apprentice system to keep their effective knowledge traditions alive and kicking.



# 15th Shodhyatra

## May 15-22, 2005
## Majheen to Dadh Chamunda, Kangra

Shodh Yatra is a journey for the search of knowledge, creativity and innovations at grassroots.

Shodh Yatra is an attempt on the part of SRISTI, NIF and Honey Bee Network to reach out to the remotest part of the country with a firm belief that hardship and challenges of natural surroundings are the prime motivators of creativity and innovations.

Shodh Yatra aims at unearthing such traditional knowledge and grassroots innovations that have not only simplified the lives of men, women and farm labourers but have also significantly contributed towards the conservation of bio-diversity.

The yatris, during the 15th Shodhyatra, over eight days traveled a distance close to 150 kilometers honouring innovators, traditional knowledge holders and centenarians on the way. Bio-diversity contests and recipe contests were also organised at various places. The participants included scientists, students, innovators, farmers and traditional knowledge holders.


Jawala Jee To Palampur
May 15 To 22 2005
Himachal Pradesh

# PART II

# HERBAL PRACTICES
## of HIMACHAL PRADESH

This section contains details of herbal preparations used traditionally for various human ailments.

# *Benincasa hispida* (Thunb.)Cogn.(petha)

Source: http://cache.eb.com/eb/image/id=29293&rendTypeId=4

## Codified literature

**Asthma**[1]
Fruit juice is given to the patient

**Fever**[1]
Seeds are used in fever

**Jaundice**[2]
Fruit juice (50ml) is given once a day for three days consecutively

**Diuretic**[3]
Seeds are used as diuretic

1. Prajapati N. D., Purohit S.S., Sharma A.K. and Kumar T. 2007. *A handbook of Medicinal Plants*, Jodhpur, Agrobios (India), Section II, Pp 86.

2. Hemadri K. and Rao S.S. 1984. Jaundice: Tribal Medicine, *Ancient Sci Life* 3 (4): 209-212

3. Li C.P. 1974. *Chinese Herbal Medicine*. U.S. Dept. Health, Education and Welfare, Washington D.C., Publ.no.(NIH) book : 75-732

## NIF database

**Cough**
Root powder (3gm) is taken along with warm water
*- Kumar Chandel, Hamirpur, Himachal Pradesh*

**Nasal bleeding**
Soak two pieces of fruit in one glass of water overnight and take it orally the next morning
*-Manju Meena, Jaipur, Rajasthan*

**Acidity**
Juice (50ml) is taken twice a day for fifteen days
*- Omana Mammen, Thiruvanandapuram, Kerala*

**Burn**
Fruit juice is applied on the affected part
*- Annama Varghese, Kanayankavayal, Kerala*

# *Abrus precatorius* L. (chirmi/konch)

## Codified literature

**Eye complaint**[1]
Dried leaves and roots powder are given orally

**Cough**[2]
Decoction of the young leaves is given orally

**Urine problem**[3]
Leaf powder is given orally

**Sciatica**[3]
Seed extracts are used

1. Jain S.P. and Verma D. M. 1981. Medicinal Plants in the folklore of North-East Haryana. *Nat. Acad. Sci. Lett.* 47: 269-271

2. Cantoria M. 1976. Aromatic and Medicinal Herbs of the Philippines. *Qul. Jour. Crude Drug Res.* 14 : 97-128

3. Jain S. K. 2001, *Dictionary of Indian Folk Medicine and Ethnobotany*, New Delhi, Deep Publication, Pp 8

## NIF database

**Backache**
Powdered seed of the plant is taken along with the powder of rhizome of *Acorus calamus* L., roots of *Asparagus racemosus* Willd., and leaves of *Vitex negundo* L., *Cannabis sativa* L. and mixed with honey and made into tablets. One tablet is given twice a day for three to four weeks
*-Ami Chand, Kangra, Himachal Pradesh*

**Baldness**
Paste is made from the ground seeds and applied on the scalp with honey
*-Mangilal Purohit, Churu, Rajasthan*

**Mouth ulcer**
Juice extracted from the green leaves is applied on the ulcers
*- Chhitar Lal Gurjar, Sawai Madhopur, Rajasthan*

**Stomachache**
Seeds (100 gm) are taken with ghee or butter give relief
*- Kalpana, Trichy, Tamil Nadu*

**Knee pain**
Seeds (6 gm) are taken orally with milk for 14 days
*- Pavan Mehra, Sikar, Rajasthan*

*Source: NIF Database*

# *Abelmoschus esculentus* (L.) Moench.(Bhindi)

Source: http://www.worldcrops.org/images/content/Cuba_500_400.JPG

## Codified literature

**Antispasmodic**[1]
The seeds are considered as antispasmodic

**Diuretic**[1]
Decoction of the immature pods are used

**Emollient poultice**[2]
The leaves are used as a poultice externally

1. Parrota J A. 2001. *Healing plants of Peninsular India*, New York. CABI Publishing. Pp. 473

2. Prajapati N. D., Purohit S.S., Sharma A.K. and Kumar T. 2007. *A handbook of Medicinal Plants*, Jodhpur, Agrobios (India), Section II, Pp. 1

## NIF database

**Wound healing**
Seeds are ground into a fine paste, which is applied on wounds.
*- Naresh Giri, Hamirpur, Himachal Pradesh*

**Hair care**
Fresh leaves are ground into a fine paste and applied on the scalp, left for an hour for drying and then given a cold water wash.
*- Dhaneswar Pradhan, Angul, Orissa*

**Cough**
Small pieces of fruits are boiled and the steam inhaled.
*-Dhrusht Dhaman Kumar, East Champaran, Bihar*

**Stomachache**
Pounded roots are taken along with water
*- Sehara Bano, Gopalganj, Bihar*

**Eczema**
Fruits (500 gm) are crushed well and oil extracted from them. This oil is massaged on the affected parts.
*-Vejabhai Lakhamanbhai, Junagadh, Gujarat*

# *Acacia catechu* (L.f.) Wild. (khair)

## Codified literature

**Stomatitis**[1]
Bark and heartwood are used

**Cough**[2]
Decoction of dried root is used as expectorant

**Diarrhoea**[1]
Bark powder is given orally

**Wounds**[3]
The aqueous extract of the resin is applied externally

1. Parrota J .A. 2001. *Healing plants of Peninsular India*, New York. CABI Publishing. Pp. 346.

2. Anon 1997. China's Pharmacopia. Part one. Traditional Chinese Medicine.Pharmacopoeia. Pp. 998.

3. Prajapati N.D., Purohit S.S., Sharma A.K. and Kumar T. 2007. *A handbook of Medicinal Plants*, Jodhpur, Agrobios (India), Section II, Pp 4

## NIF database

**Constipation**
Resin of plant is mixed with spices and taken orally at night.
*-Rasila Ram , Kangra, Himachal Pradesh*

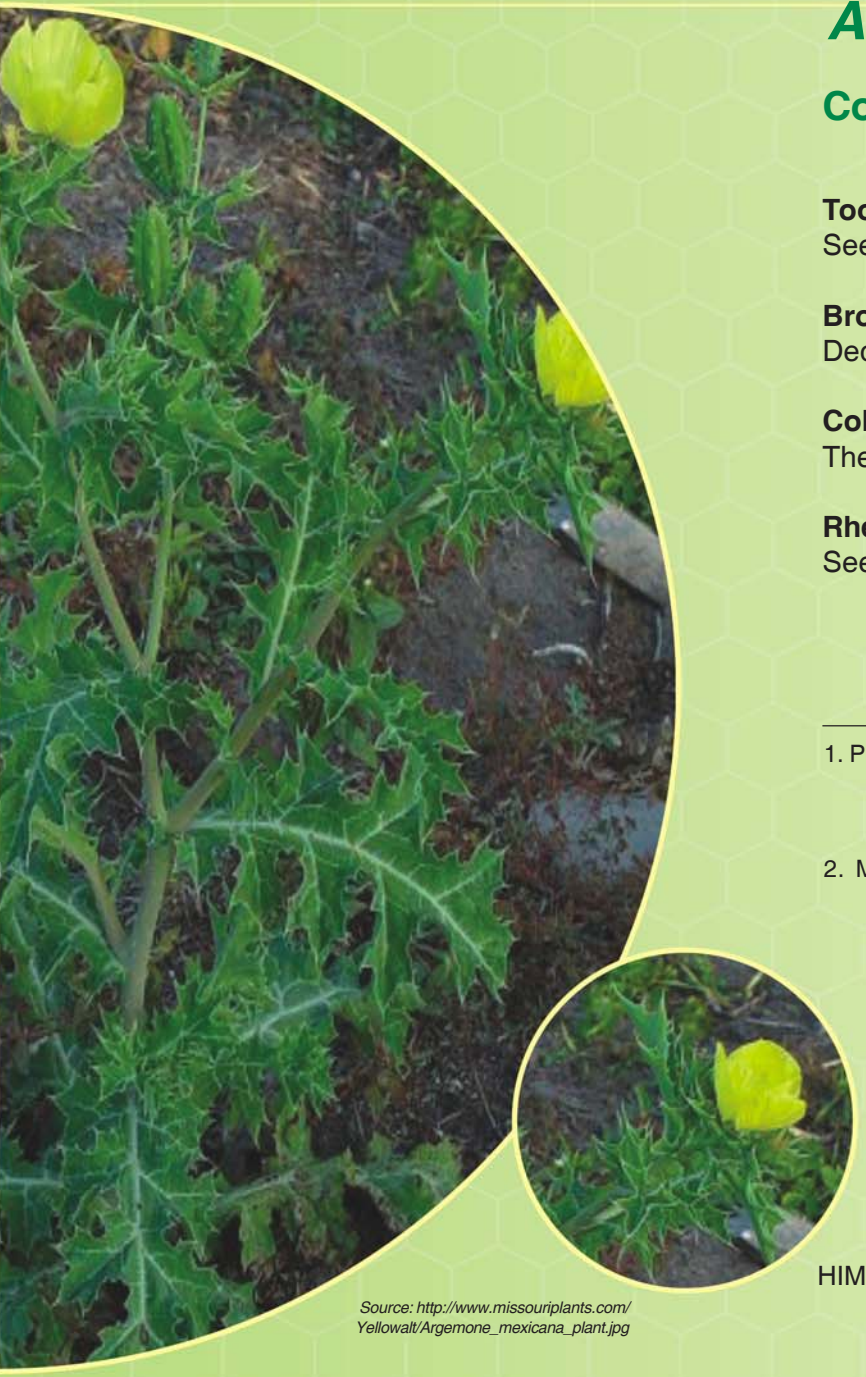
**Hiccups**
Resin of plant is ground along with betel leaves, betel nut and cardamom. The juice obtained is boiled and the decoction is given thrice a day till the ailment gets cured
*-Jasmit Singh , Hamirpur, Himachal Pradesh*

**Mouth sores**
Resin is directly applied on the sores
*- Babulal Sharma, Alwar, Rajasthan*

**Itching**
Paste of the tender leaves is applied topically
*-Bihari Lal, Sikar, Rajasthan*

*Source: http://home.hiroshimau.ac.jp/shoyaku/photo/Thai/021202Acacia.jpg*

# *Argemone mexicana* L. (satyanasi)



Source: http://www.missouriplants.com/Yellowalt/Argemone_mexicana_plant.jpg

## Codified literature

**Toothache**[1]
Seed powder is taken orally

**Bronchitis**[2]
Decoction of the plant is given orally

**Colic**[1]
The seed oil is useful

**Rheumatism**[1]
Seed powder is given orally

1. Prajapati N. D., Purohit S.S., Sharma A.K. and Kumar T. 2007. *A handbook of Medicinal Plants*, Jodhpur, Agrobios (India), Section II, Pp. 59.

2. Mendez X.M.1937. Pharmacologic Data of Some Mexican Remedies. *J Amer Inst Homeopathy*, 30: 271-277

## NIF database

**Intestinal worms**
Roots (½ inch) are taken along with water thrice a day to remove hookworms
*-Amar Singh, Kangra*

**Fever**
One teaspoon root decoction is taken with a glass of water twice a day for 2 to 3 days
*-Gopal Mahato, Hazaribagh, Jharkhand*

**Itching**
Juice extracted from the plant is applied on the affected part
*- Rameshwari Devi, Sikar, Rajasthan*

**Abscess/blisters**
Juice extracted from the plant is applied on the affected part
*- Chandra kanvar, Sikar, Rajasthan*

# *Butea monosperma* (Lamk.) Taub. (dhak/palash)

## Codified literature

**Pimples**[1]
Bark is used as poultice

**Anthelmintic**[2]
Bark juice is given orally

**Diuretic**[3]
Dried flower powder is taken orally

## NIF database

**Acidity**
Resin (2g) is taken with cold water
*- Pritam Chand, Kangra, Himachal Pradesh*

**Toothache**
Resin powder is filled in damaged gums.
*- Bhomabhai Damor, Banaskantha, Gujarat*

**Dysentery**
Resin (25gm) is taken orally
*- Thavriben Kateria, Banaskantha, Gujarat*

**Joint pain**
Powdered resin is taken with milk
*- Devaram, Sirohi, Rajasthan*

**Wounds**
Bark paste is applied on the wound
*- Chatrabhai Parmar, Banaskantha, Gujarat*

*Source: http://www.plantcreations.com/images/Butea_monosperma_amazing.jpg*

1. Khan, M.A., Khan,T. and Ahmad, Z. 1994. Barks used as source of medicine in Madhya Pradesh, India. *Fitoterapia* 65 (5): 444-446

2. Bhattarai, N.K. 1993. Medical Ethnobotany in the Rapti Zone, Nepal. *Fitoterapia* 64 (6): 483-493.

3. Prajapati N. D., Purohit S.S., Sharma A.K. and Kumar T. 2007. *A handbook of Medicinal Plants*, Jodhpur, Agrobios (India), Section II, Pp 100.

# *Cassia fistula* L. (amaltas)

Source: http://www.bh-froe.com/ZC/images/Cassia_fistula.jpg

## Codified literature

**Leucoderma**[1]
Powder of dried bark is applied

**Jaundice**[2]
Fruit juice is used

**Diuretic**[2]
Fruits are used as diuretic

**Skin disease**[2]
Root powder to be applied

1.Reddy,M.B. Reddy,K.R. and Reddy,M.N. 1988. A survey of medicinal plants of Chenchu Tribes of Andhra Pradesh, India. *Int J Crude Drug Res* 26 (4): 189-196

2. Prajapati N. D., Purohit S.S., Sharma A.K. and Kumar T. 2007. *A handbook of Medicinal Plants*, Jodhpur, Agrobios (India), Section II, Pp 119-120.

## NIF database

**Ringworm**
Paste of the scrubbed tuber is applied on the infected part of the body for a few days
*- Kumar Chandel, Hamirpur*

**Cough**
Skin of the fruit is chewed in the morning
*- Santoshben Gamar, Banaskantha, Gujarat*

**Stomachache**
Decoction of the fruit and jaggery is taken orally
*- Bhagwati Lal Kumawat, Chittorgarh, Rajasthan*



http://www.bh-froe.com/ZC/images/Cassia_fistula.jpg

# *Celastrus paniculatus* Willd. (malkangani)

## Codified literature

**Cardiotonic**[1]
Fruit juice is used as cardiotonic

**Appetizer**[1]
Seeds are used as appetizer

**Rheumatism**[2]
Paste of the fruit mixed with warmed mustard oil is applied externally

1. Prajapati N.D., Purohit S.S., Sharma A.K. and Kumar T. 2007. *A handbook of Medicinal Plants*, Jodhpur, Agrobios (India), Section II, pp 127-128

2.Singh, K.K and Maheshwari, J.K. 1994. Traditional Phytotherapy of some medicinal plants used by the Tharus of the Nainital District, Uttar Pradesh, India. *Int J Pharmacog* 32 (1): 51-58

## NIF database

**Greying of hair**
Oil is applied on the scalp
*- Sharvan Singh, Kangra, Himachal Pradesh*

**Tuberculosis**
Oil (3 drops) is mixed in the egg yolk and given to the patient
*- Prishila Dudoo, Hazaribag, Jharkhand, Rajasthan*

**Gas/acidity**
Powdered seeds (2-3 gm) are taken orally with water
*- Devaram, Sirohi, Rajasthan*

**Intestinal worms**
Shade dried fruit is ground into a fine powder and sieved. 2-3 tablespoons of the powder is taken orally in the morning and evening for 4-5 days
*- Nimavat Gitaben J, Junagadh, Gujarat*

**Skin disease**
Oil is applied on the infected area
*- Devaram, Sirohi, Rajasthan*

*Source: http://home.hiroshimau.ac.jp/shoyaku/photo/Thai/020305Celastrus.jpg*

# *Cuscuta reflexa* Roxb. (amarbel)

Source: http://envis.frlht.org.in/pimages/707_1.jpg

## Codified literature

**Fever**[1]
Decoction of the vine is mixed in the water for bathing

**Carminative**[2]
Seeds are used as carminative

**Jaundice**[2]
The plant is used for jaundice

**Diuretic**[2]
Extract of the plant is used as diuretic

1.Singh Y.N. 1986. Traditional Medicine in Fiji: Some Herbal folk cures used by Fiji Indians. *J Ethnopharmacol* 15 (1): 57-88

2. Prajapati N. D., Purohit S.S., Sharma A.K. and Kumar T. 2007. A handbook of Medicinal Plants, Jodhpur, Agrobios (India), Section II, Pp 182.

## NIF database

**Anthelminitic**
Extract of plant (50 g) is taken in 100 ml of water for 7 days
*-Prabhat Sharma, Kangra, Himachal Pradesh*

**Baldness**
Plant (250 g) is dissolved in three litres of water and boiled. The decoction is applied for three months.
*-Padmakant Sharma, Jaipur, Rajasthan*

**Skin diseases**
Plant paste is applied over the infected area
*-Robert L Hamte, Aizwal, Mizoram*

# *Ficus carica* L. (anjir)

## Codified literature

**Cough**[1]
Decoction of boiled fruit is taken orally

**Warts**[2]
Milky latex is applied externally

**Constipation**[2]
Juice extracted from fruit is taken orally

**Laxative**[2]
Fruit juice is taken orally

1.Ghazanfar S.A. 1993. Al-abahi,M.A:Medicinal Plants Of Northern And Central Oman (Arabia). *Econ Bot* 47 (1): 89-98

2. Prajapati N. D., Purohit S.S., Sharma A.K. and Kumar T. 2007. A handbook of Medicinal Plants, Jodhpur, Agrobios (India), Section II, Pp 237-238

## NIF database

**Gastritis**
Two tablespoon powder of shade dried fruit are mixed in 200ml of water, left over night and taken the next morning
*- Kumar Chandel, Hamirpur, Himachal Pradesh*

**Blood purification**
Fruit, if taken regularly, acts as blood purifier
*- Devaram, Sirohi, Rajasthan*

**Cardiac problem**
Lukewarm fruit juice (2 spoons) is taken orally
*-Sarathy Maity, East Midnapur, West Bengal*

**Bleeding piles**
Two fruits are soaked in half a glass of water for twelve hours, after which the water is taken orally. This is to be continued till the ailment cures
*-Kumari Sarita, Sikar, Rajasthan*

**Leucoderma**
Bark powder (2 spoons) is given orally with water
*-Sarathy Maity, East Midnapur, West Bengal*

*Source: http://www.profizahrada.cz/images_data/2837-ficus-carica-2.jpg*

# *Juglans regia* L. (akhrot)

**Source: http:**//www.bomengids.nl/zomer2004/pics/Okkernoot_Walnoot_Juglans_regia_Common_or_Black_walnut_img_5402lulpg

## Codified literature

**Abscess**[1]
Poultice of fruit is applied externally

**Carminative**[2]
The fruit is used as carminative

**Tapeworm**[2]
Oil extracted from fruit is taken orally

1. Tabata M., Sezik E., Honda G., Yesilada E., Fukui H., Goto K and Ikeshiro Y. 1994. Traditional Medicine in Turkey III. Folk Medicine in East Anatolia, Van and Bitlis Provinces. *Int J Pharmacog* 32 (1): 3-12

2. Prajapati N. D., Purohit S.S., Sharma A.K. and Kumar T. 2007. *A handbook of Medicinal Plants*, Jodhpur, Agrobios (India), Section II, pp 297.

## NIF database

**Hair care**
Daily application of the oil on the scalp reduces hair fall
*- Joginder Singh Negi, Kulu, Himachal Pradesh*

**Tongue cleaning**
Bark of akhrot chewed along with the leaves of neem (*Azadirachta indica* Juss.) keeps the tongue clear and clean
*-Shilpa Jain, Rajkot, Gujarat*

**Swelling on body**
Mix oil (50g) with cow's urine (10g) and take orally
*-Shripal Singh, Bulandshahar, Uttar Pradesh*

**Knee pain**
Couple of fruits are taken everyday for relief
*- Koushlya Kumawat, Rajasthan*

**Wounds**
Fruit skin sap is applied topically
*- Nasir Ahmed Sheikh, Anantnag, Jammu & Kashmir*

# *Vitex negundo* L. (nirgudi)

## Codified literature

**Cough**[1]
Inhale the smoke of smouldering leaves; warm leaves are rubbed on face

**Colic**[2]
Roots are useful

**Diarrhoea**[2]
Flowers are used for this purpose

**Diuretic**[2]
Extract of the plant is taken

1. Reddy M.B., Reddy K.R. and Reddy M.N. 1989. A survey of plant crude drugs of Anantapur district, Andhra Pradesh, India. *Int J Crude Drug Res* 27 (3): 145-155.

2. Prajapati N. D., Purohit S.S., Sharma A.K. and Kumar T. 2007. *A handbook of Medicinal Plants*, Jodhpur, Agrobios (India), Section II, Pp 543-544.

## NIF database

**Ear pain**

Boil the leaves in mustard oil, filter it and use as ear drop.
*- Bhagat Ram, Kangra, Himachal pradesh*

**Ulcer**
Leaf juice (half a cup) is taken orally
*- P D Walikar, Bagalakot, Karnataka*

**Rheumatism**
Lukewarm leaves are applied on aching joints
*- Naganath Durga Chogule, Sholapur, Maharashtra*

**Skin disease**
Small pieces of plant are mixed with cow's urine and applied over the affected skin
*- K. Lakshmana Shetty, South Canara, Karnataka*

*Source: http://home.hiroshima.ac.jp/shoyaku/photo/Thai/021202Vitex.jpg*

# *Centella asiatica (L.)* Urban (brahmi)

Source: http://images.google.co.in/images?hl=en&q=centella+asiatica&btnG=Search+Images&gbv=2

## Codified literature

**Brain tonic**[1]
Fresh juice from aerial part is used as brain tonic

**High blood pressure**[2]
Powder of aerial portion is taken

**Diuretic**[3]
The whole plant is used as diuretic

**Fracture**[3]
Plant paste is applied as a poultice

1. Adesina S.K. 1982. Studies on some plants used as anticonvulsants in Amerindian and African Traditional Medicine. *Fitoterapia*. 53 : 147-162

2. Panthong A., Kanjanapothi D. and Taylor W.C. 1986. Ethnobotanical Review of Medicinal Plants from Thai Traditional Books, Part 1: Plants With Antinflammatory, Anti-asthmatic and Antihypertensive Properties. *J Ethnopharmacol.* 18 (3): 213-228

3. Prajapati N. D., Purohit S.S., Sharma A.K. and Kumar T. 2007. *A handbook of Medicinal Plants*, Jodhpur, Agrobios (India), Section II, pp. 129.

## NIF database

**Insomnia**
Plant paste is taken regularly with food
- *Khiroram Barman, Borpeta, Assam*

**Toothache**
Grind equal portion of brahmi leaves, onion and banana root to make a fine paste. This paste is applied on the aching part
- *Anil Gogoi, Sibsagar, Assam*

**Jaundice**
Grind plant (10g) with water. Filter the solution and take orally
- *Vifiya Urav, Lohardaga, Jharkhand*

**Dysentery**
Leaf paste along with black pepper is given orally
- *Dipali Borah*, *Sibsagar, Assam*

PART III

# INNOVATIONS
## for HIMACHAL PRADESH

This section contains details of innovations which are deemed suitable for introduction in Himachal Pradesh

**Arvindbhai Patel**
Gujarat

# Auto air kick pump & the natural water cooler

This innovation is a low cost, portable, compact aid to inflate tyre tubes/punctures of any vehicle having kick start or auto start mechanism so as to fix the problem on the spot and enable the rider to reach the nearby gas station or repair shop. This device uses the engine as the compressor for pumping air into the tube. A pinch of polymer granules is also inserted in the tube to seal the leakage in the tube.

Arvindbhai won a National Award in NIF's Second National Competition for Grassroots Innovations and Traditional Knowledge in 2002. NIF, apart from filing a patent in his name, facilitated sales of a few hundred pieces to customers in Assam and Arunachal Pradesh through dealership technology licensing and local entrepreneurs. The technology is available for licensing to enterpreneurs in different states.

Water Cooler: We already have refrigerators that operate on the principle of heat transfer and earthen pots that work on the principle of evaporation to cool water today. Arvindbhai has combined both features. In his natural water cooler, water is passed through cotton string covered copper coils, which are continuously being moistened by a dripper. Evaporation of water from lining on the coil cools the water inside. Cool water without electricity, isn't it a nice idea!

02

# Pulley with stopper

**Amrutbhai Agrawat**
Gujarat

Millions of villagers in India face the problem of the hoisting rope sliding away inside the well when left free, with chafing of hands and crashing of bucket. This simple, low cost innovation is a pulley stopper that solves the problem.

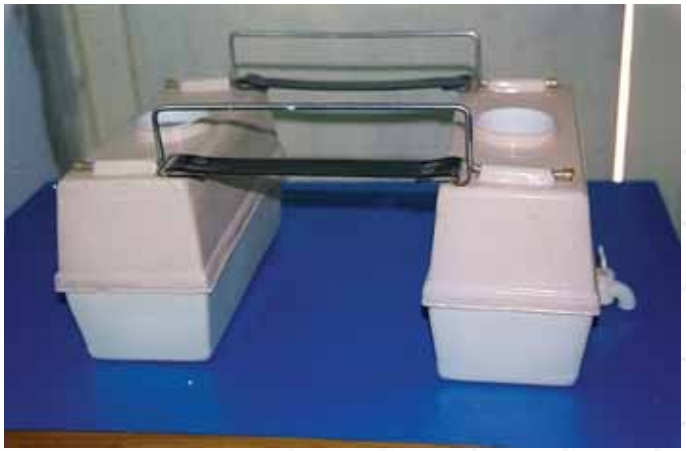
A ratchet is attached to a pulley for preventing the movement of rope towards the well thereby reducing slippage, accidents and injuries to women and children. The innovation is available in three models - Ganga, Narmada and Saraswati.

**Madhav Sawant**
Maharashtra

# "Jalpari"- The water carrier

Women who walk miles with heavy water pitchers on their head, suffer discomfort and even injuries. This innovation consists of a shoulder slung unit fixed with water canisters balanced on either side.

The carrier has two washable plastic containers of 20 liters capacity in the front and the back respectively. Metallic handle grips for holding and picking, a soft flexible shoulder strap and a tap for taking out water are some of the features of this versatile unit.



04

# Fruit harvesting device

**Madhav Mahajan**
Maharashtra

Farmers all over India need a simple device that can reach tall branches of trees to cut and harvest thousands of fruits per day. This innovative device with unique shape and cutting action can be used to harvest fruits quickly, saving time and increasing output.

The novelty lies in the design of replaceable cutting blades and hooking angle given to the oval shaped ring that assists in harvesting the fruits on upright branches. It is light weight, durable and suitable for harvesting fruits like mango, safota, guava, orange, etc.

# Production of soft *muga* silk

**Dulal Choudhary***
Assam

The innovator has mechanised the process of *muga* silk weaving by way of making modifications in the conventional mechanised loom. *Muga* silk weaved with the device becomes soft as well as blocks UV radiations up to 80 % as per laboratory tests at Tezpur University.

The innovator has made various products like shirts, belts, caps etc. with the *muga* weaved from this loom. He has also made an umbrella out of this material which is durable, stain free, and water proof. It has a pleasing golden shine which illuminates colour, better than that offered by conventional umbrellas.

NIF had facilitated the technology transfer of this *muga* umbrella to Assam Silk Development Centre.

*As per its mandate, NIF does not consider professionals for awards or financial support, but only helps in providing visibility or linkages.

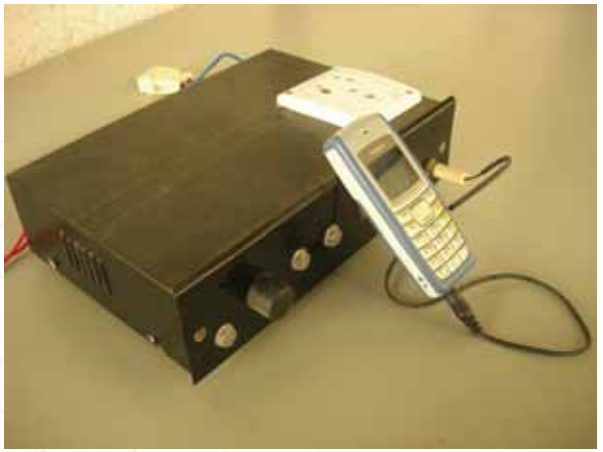
06

# Mobile operated switch and multi-media poster

**Prem Singh Saini**
Haryana

Imagine a village where the farmer has the luxury of being able to stay at home and switch his irrigation pump in the faraway field on or off as required during the day or at night. This is made possible by this innovation, which uses the power of mobile telephony to trigger electrical control switches.

The farmer can remotely know the status of the pump in his cell phone and turn the motor on or off by calling the particular configured number. It activates the switching by certain number of rings and hence incurs no call charges. Prem Singh has developed several other innovations, one of which is the viewer triggered multi-media poster. If any agency wants to communicate some graphic message with different language audios or videos, this multi-media poster can be very useful. NIF facilitated a Mumbai based company to purchase two hundred units of the talking poster worth around eight lakh rupees for diffusion in various states. These were made available in five local languages.



**N Sakthimainthan**
Tamil Nadu

# Hand operated water lifting device

An efficient way of pumping water to meet requirements in a cost effective way is always a challenge in rural India.

Developed from locally available materials, this hand operated water lifting device is simple in design, delivers high discharge and is low cost compared to conventional hand pump, bucket pump, and bicycle operated pumps.

The Innovation has been taken up for value addition at CMERI Durgapur (WB) through the NIF-CSIR JIC Fellowship Scheme.

08

# Multi purpose wood-working machine

**Ghonakanta Gogoi**
Assam

Small carpentry workshops have difficulty in purchasing and using multiple machines due to high initial costs, space constraints and maintenance considerations.

This multipurpose machine with minimal footprint, is built to address all major workshop needs, allowing completing the sequence of wood-working operations in one place, and allowing better control on finished product.

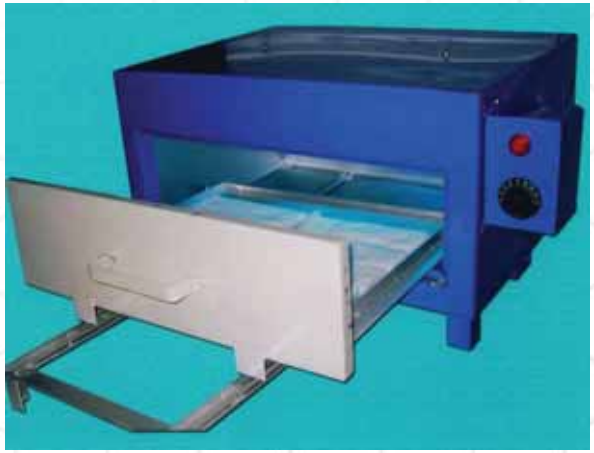
**A. Muruganandam**
Tamil Nadu

# Sanitary napkin making machine: An option for women entrepreneurship

Sanitary napkins, a universally needed product, have a very low penetration in India due to high price and the traditional trend of using cheaper but unhygienic old cloth pieces. The innovator has developed a machine that produces quality sanitary napkins at a low cost.

One can prepare sanitary napkins with industry standard raw materials while cutting down the cost in production. It requires three to four persons to produce two pads per minute. Costing less than half of conventional options, this machine produces sanitary pads @ Rs.1 to Rs. 1.50 per pad approximately.

The innovator prefers to sell the napkin making machinery only to self-help groups of women. He has also designed a napkin vending machine such that one can put a coin and get a pad. With the support from the Micro Venture Innovation Fund scheme of NIF, the innovator has been able to install over fifty units in seven states.



10

# Maruti Jhoola- the health care chair

**Sakrabhai Prajapati**
Gujarat

Modern life with its fast pace and sedentary lifestyle has created the need for solutions incorporating relaxation and invigoration. Maruti Jhoola is a unique health chair with multiple capabilities, functions and settings for various postures and seating dynamics.

It is ergonomically designed and serves the purpose of seating as well as exercising, with a capacity to accommodate a person weighing 120 kgs. It can double up as a hammock or a jhoola. The health chair has established itself as useful for people suffering from arthritis and joint ailments. To facilitate marketing an entrepreneur has been engaged. Earlier, lot of cost was spent on packaging and transportation of the chair. It is now being redesigned and the cost may come down.

**M. Nagrajan**
Tamil Nadu

# Garlic peeling & lemon cutting machine

Faster peeling of garlic in an effective way is a major requirement in the pickle industry. This product is a food-grade, fully automated machinery designed for bulk quantity peeling of garlic. The machine ensures minimal damage and has wide application in making pickles and herbal medicines. The machine is energy efficient, saves labour, and has low capital and operating cost. It frees the industry from capacity constraints caused by shortage of labour in peak seasons.

The second product is also used in pickle industry, but for cutting lemons. It is a cost effective machine, having innovative design, with continuous feeding system. It performs precise and standard cutting of large quantity of lemons in uniform shape and size. It can be operated by one person and cuts lemon into eight equal pieces. The innovator has been able to run a good business with the financial support of Micro Venture Innovation Fund and marketing effort of NIF.

12

# Manual milking machine

**Raghav Gowda**
Karnataka

Safe milking of cows/buffaloes is a requirement across rural India and this product is an efficient step in that direction. It is a low cost, manually operated device that helps farmers to milk the animal hygienically and also reduces drudgery in the process.

The machine has simple controls and can be easily operated by women as well. The creation of suction and low vacuum makes it suitable for other applications also. NIF has been giving marketing support to the innovator. As a result, this machine has also been sold to customers in Phillipines, Uganda and Ethiopia apart from India.

**Karuna K. Nath**
Assam

# Manual wood cutting machnine

Cutting of wood effectively and efficiently is achieved by this machine. The equipment is cost efficient, and can be manually operated with both hand and foot pedal options. Most importantly it is portable, and can be taken to any worksite and has more productivity compared to manual sawing.

This equipment consumes lesser time and labour compared to available saws and has a mechanism and linkages similar to manually operated sewing machine. The work of three labourers can be done by one labour using this machine. The innovator has also developed a multi bobin *charkha* and a bamboo cross cutter. He has been supported under the *MVIF* scheme of NIF and has been doing modest business in the area.

Karuna was awarded during the Third National Competition of NIF.

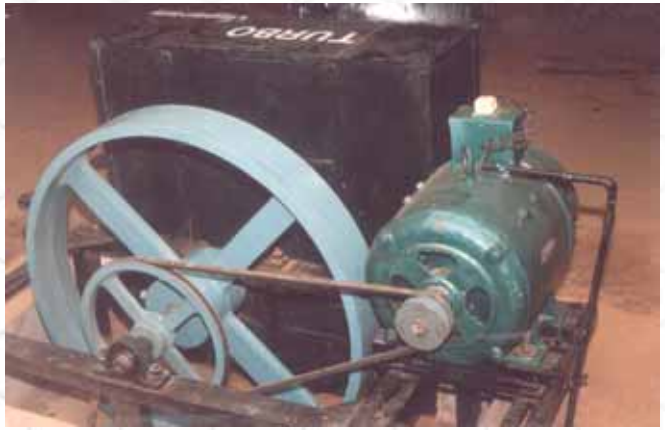
13

# Modified hydro electricity turbine

**G. K. Ratnakar**
Karnataka

Electricity supply in the hills is always a problem with either the difficulty of access or distribution or disruption.

Hydro electric turbine is specifically designed for the hills. It costs Rs.30,000 and meets the individual electric needs of a rural household. The innovator has installed a few of these turbines in the hilly villages of Karnataka.




**K. Balakrishna**
Karnataka

# Power generation through sewage

There is a search going around the world for solutions that harness alternate energy sources to generate electricity. The innovator has developed a system that generates energy from slow moving sewage or any other source of flowing water.

In this arrangement, electricity is generated when the slow moving sewage/water is passed through a cylindrical drum. The helical blades inside the drum rotate it and and generate power. The capacity of the existing pilot unit is 30 kVA. This technology can have a tremendous impact on the generation of power from low velocity, high volume discharge of effluents from industries and civil sewage processing plants. NIF has been actively following up with national and international entities for partnership in taking this innovation forward. NIF has also filed a patent for the technology in the innovator's name. Public agencies such as municipal authorities can particularly help in testing its utility.


16

# Hydro generator using bamboo composite

**Imli Toshi Namo**
Nagaland

Energy generation and pumping water for irrigation is a widespread rural need.

The innovator has used the bamboo powder, a by-product from the bamboo lathe machine invented by him, and mixed it with a resin to create a strong composite to fabricate the lightweight hydro turbine for generation of energy.

**Khimjibhai Kanadia**
Gujarat

# Panihari: A head load reducing device

Rural women walk tens of miles with heavy load on their head, which causes stress, discomfort and eventually head and neck injuries.

The product is an ergonomically designed device fixed on top of the head, with two extended supporting rods from the sides of the device. The device transfers the weight carried on the head to the shoulders, which is better positioned to carry weight.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